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1 P R O C E E D I N G S

2 (Jury out.)

3 COURT SECURITY OFFICER: All rise.

4 THE COURT: Be seated, please.

5 All right. Are the parties ready to read into the  
6 record from the podium those items from the list of  
7 pre-admitted exhibits used during yesterday's portion of  
8 the trial?

9 MS. HENRY: We are, Your Honor.

10 THE COURT: All right. Please proceed.

11 MS. HENRY: Good morning. Plaintiff reads into  
12 the record PTX-1, PTX-2, PTX-3, PTX-260, PTX-261, PTX-262,  
13 and PTX-328.

14 THE COURT: All right. Any objections from  
15 Defendants, Ms. Smith?

16 MS. SMITH: No, Your Honor.

17 THE COURT: Do Defendants have a similar  
18 rendition?

19 MS. SMITH: We do, Your Honor.

20 THE COURT: Please proceed.

21 MS. SMITH: DX-129, DX-1, and DX-55.

22 THE COURT: All right. Any objection, Ms. Henry?

23 MS. HENRY: No, Your Honor.

24 THE COURT: All right. Thank you, counsel.

25 And we recessed yesterday with Plaintiffs having

1 passed the witness, Mr. Paschke.

2 Are Defendants prepared to begin  
3 cross-examination?

4 MS. SMITH: Yes, Your Honor.

5 THE COURT: All right. Mr. Paschke, you need to  
6 return to the witness stand, please. And I remind you,  
7 sir, you remain under oath.

8 THE WITNESS: Yes, Your Honor.

9 THE COURT: Once he's in place, Mr. Johnston,  
10 please bring in the jury.

11 MS. SMITH: Your Honor, may I approach to pass up  
12 some binders?

13 THE COURT: Yes, you may. You may.

14 Ms. Smith, is this binder for the witness's  
15 benefit?

16 MS. SMITH: Yes, it is.

17 THE COURT: All right.

18 MS. SMITH: I was missing a marshal over there,  
19 but --

20 THE COURT: As soon as he's back, why don't you  
21 ask, and then you can hand it to him, and he'll give it to  
22 the witness.

23 MS. SMITH: I will, Your Honor.

24 COURT SECURITY OFFICER: All rise.

25 (Jury in.)

1 THE COURT: Good morning, ladies and gentlemen of  
2 the jury. Welcome back. Please have a seat.

3 You'll recall when we recessed for the day  
4 yesterday, Mr. John Paschke was on the witness stand.

5 He had been examined by the Plaintiffs. They had  
6 passed the witness, and we'll begin with cross-examination  
7 of the witness by the Defendants.

8 Ms. Smith, you may proceed.

9 MS. SMITH: Your Honor, may I approach to provide  
10 the witness a notebook?

11 THE COURT: You may.

12 MS. SMITH: Thank you.

13 JOHN PASCHKE, PLAINTIFF'S WITNESS, PREVIOUSLY SWORN

14 CROSS-EXAMINATION

15 BY MS. SMITH:

16 Q. Good morning, sir.

17 A. Good morning.

18 Q. I don't think we've met before. My name is Melissa  
19 Smith, and I represent T-MO and Ericsson.

20 Now, you went to law school, sir?

21 A. I did.

22 Q. And you went to engineering school.

23 A. I did.

24 Q. But today your role is to be the spokesperson for IV,  
25 and the only IV employee that will testify live here at

1 trial; is that correct?

2 A. That's correct.

3 Q. Now, Mr. Paschke, you spent a fair amount of time  
4 yesterday talking about how -- how you've been successful,  
5 and IV has been successful flying around the world  
6 licensing for Intellectual Ventures; is that correct?

7 A. I recall the testimony.

8 Q. And you said, when you're out trying to license IV  
9 patents and someone is unwilling to take a license, that  
10 litigation is the only option you have.

11 Do you recall that testimony?

12 A. I believe I said it's often the only option, but yes.

13 Q. I apologize. Often the only option you have.

14 Now, did IV ever offer a license to the patents in  
15 this case to Ericsson before filing a lawsuit?

16 A. No.

17 Q. You also mentioned the 1.5 billion, give or take, I  
18 think you said, dollars that IV's brought in through its  
19 licensing program.

20 A. No, ma'am.

21 Q. What was the 1.5 billion that you mentioned?

22 A. That was what I have licensed personally in my career.

23 Q. And you told the jury that \$77 million is a reasonable  
24 number for the jury to award in this case; is that correct?

25 A. Yes, I believe it is.

1 Q. But you understand the jury may never get that far,  
2 sir.

3 A. Well, that's correct.

4 Q. You understand -- you have a law degree.

5 A. I do.

6 Q. And you heard -- you were in the courtroom when Judge  
7 Gilstrap gave the jurors some instructions, were you not?

8 A. Yes, I was.

9 Q. So you understand from Judge Gilstrap's instructions  
10 that the first question the jury is going to be asked when  
11 Judge Gilstrap sends them back there to deliberate is  
12 whether or not the Defendants have infringed the T-MO --  
13 the Malibu patents. Excuse me.

14 A. Yes, ma'am.

15 Q. Okay. But you're not here to testify about whether  
16 Ericsson or T-MO infringed the three patents being asserted  
17 here, are you?

18 A. Not me personally, no.

19 Q. Because you have no understanding at any level how the  
20 items in T-MO's network are accused to infringe the  
21 patents, do you?

22 A. That is correct. The information was confidential, and  
23 I was not able to.

24 Q. And, in fact, no employee of IV is going to come in  
25 here live and testify at any level as to how T-MO and

1 Ericsson infringe any of the patents, correct?

2 A. No, ma'am. We have technical experts that will be  
3 testifying as to that infringement issue.

4 Q. And nobody from Malibu is going to come in here and  
5 talk about whether or not Ericsson or T-MO infringed the  
6 Malibu patents; is that correct?

7 A. Yes, that's correct.

8 Q. And we certainly didn't hear anything yesterday from  
9 IV's paid fact witness, Mr. Jorgensen about infringement,  
10 did we?

11 A. Not the legal question of infringement, no.

12 Q. Well, Mr. Jorgensen's evidence that he provided --

13 THE COURT: Dr. Jorgensen.

14 MS. SMITH: I apologize, Your Honor.

15 Dr. Jorgensen.

16 Q. (By Ms. Smith) Dr. Jorgensen provided evidence about  
17 the titles of each of the three patents, did he not?

18 A. He did.

19 Q. And it's Plaintiff's burden to prove that Defendants  
20 practice each step of the claims in the patents; is that  
21 correct?

22 A. Yes, that is our burden to prove.

23 Q. And you heard -- you were here, and you were present  
24 for Mr. Ward's opening.

25 A. Yes, ma'am.



1 Q. And Mr. Ward didn't even put up the claims, did he?

2 A. No, ma'am, not in opening.

3 Q. And IV has a paid expert witness that's going to do  
4 that as well, correct?

5 A. That is correct.

6 Q. Now, sir, you mentioned that Samsung -- Samsung makes  
7 base stations.

8 A. Yes, ma'am.

9 Q. And Nokia makes base stations.

10 A. Yes.

11 Q. And those folks are licensed.

12 A. They are.

13 Q. Okay. You're not telling this jury that Ericsson base  
14 stations work like all other base stations, are you?

15 A. No, ma'am, I'm not.

16 Q. Because base stations aren't one size fits all, are  
17 they?

18 A. No, ma'am, they're not.

19 Q. Okay. And you have an engineering degree, correct?

20 A. I do.

21 Q. But the closest you've ever come to looking at what's  
22 -- opening up the hood and looking up under the hood and  
23 seeing the component parts of a base station was when  
24 Mr. Kubehl set one up on the table there the other day;  
25 isn't that right?

1 A. Probably, with respect to actual base stations, yes.

2 Q. You understand the second question that Judge Gilstrap  
3 is going to ask the jury has got to do with whether or not  
4 the Malibu patents are even valid; is that correct?

5 A. Yes, ma'am.

6 Q. Okay. You're not here to provide any testimony to this  
7 jury about whether or not the patents are valid, are you?

8 A. I am not personally, no.

9 Q. And your job, your analysis of the validity is you  
10 license as much as you can until somebody tells you that  
11 the patents are invalid and can't be license -- licensed  
12 anymore; is that correct?

13 A. No, ma'am. Our analysis of validity for these patents  
14 is based both on the Patent Office issuing these patents,  
15 as well as the expert testimony that our expert will  
16 provide today with respect to the validity question.

17 Q. And you mentioned your expert. Again, you're the only  
18 witness -- live witness for IV in this entire five-day  
19 trial; is that correct?

20 A. When you say IV, I'm the only full-time employee of IV.

21 The expert that is working with us will be  
22 testifying on our behalf.

23 Q. You're the only full-time employee of IV.

24 A. Yes, that's correct.

25 Q. And no other IV employee will be here to testify as to

1 the validity of the Malibu patents, correct?

2 A. That is correct.

3 Q. IV hired an expert for that?

4 A. Yes, ma'am, we did.

5 Q. As to the purchase of the Malibu portfolio, you didn't  
6 even have a hand in that, did you?

7 A. Me personally? No. That happened, I think, seven  
8 years before I joined the company.

9 Q. And that's -- and that's also because acquiring patents  
10 is not among your primary responsibilities.

11 A. That is correct.

12 Q. And the Malibu deal was hired by Mr. Detkin, correct,  
13 seven years before you joined the company?

14 A. I believe that's correct. Mr. Detkin at least was  
15 certainly involved in the Malibu purchase.

16 Q. And he would certainly know more than you would about  
17 the Malibu purchase, correct?

18 A. I would believe he would, yes.

19 Q. But Mr. Detkin isn't coming to visit with these jurors  
20 at trial, is he?

21 A. No.

22 Q. Now, just to clarify, the company that's the Plaintiff  
23 in this lawsuit is Intellectual Ventures I LLC, right?

24 A. That is correct.

25 Q. And that's a business under what's called -- I think

1 you said the Invention Investment Fund, that umbrella; is  
2 that correct?

3 A. That' correct. Technically, it's Invention Investment  
4 Fund I.

5 Q. And that Invention Investment Fund allows IV, the  
6 Plaintiff in this case, to invest in patents?

7 A. Yes, ma'am.

8 Q. And to monetize patents?

9 A. Yes, ma'am.

10 Q. And that's the primary business model of IV I or the  
11 Plaintiff in this case?

12 A. Yes, ma'am.

13 Q. Now, you understand that -- as a lawyer, you understand  
14 that a complaint in a case includes Plaintiff's allegations  
15 against a Defendant, like T-MO and Ericsson?

16 A. Yes, I do.

17 Q. Have you had an opportunity to look at the complaint in  
18 this case?

19 A. I have.

20 Q. Sir, I'll direct your attention to Defendants'  
21 Exhibit 560, please.

22 MS. SMITH: If I could see Paragraph 20. Thank  
23 you.

24 Q. (By Ms. Smith) Now, we're looking at the complaint,  
25 and if you'll read with me, it says -- let's see where I

1 am. Intellectual -- Intellectual Ventures develops its own  
2 inventions, has a staff of scientists and engineers who  
3 develop ideas in a broad range of fields. We see  
4 agriculture, life sciences, medical devices. Do you see  
5 that, sir?

6 A. Yes, ma'am I do.

7 Q. But the Plaintiff in this case, it doesn't have a staff  
8 of scientists, does it, sir?

9 A. No, ma'am. But this is referring to -- if you look  
10 back to Paragraph 18, Intellectual Ventures Management,  
11 which is the overarching management company that provides  
12 management services to all of the IV companies, including  
13 the development companies and the philanthropic global good  
14 companies.

15 MS. SMITH: I'll object, nonresponsive, Your  
16 Honor.

17 THE COURT: Sustained after "no, ma'am." That  
18 part is responsive. The rest is nonresponsive.

19 MS. SMITH: Thank you, Your Honor.

20 THE COURT: I'll strike the portion of the answer  
21 after "no, ma'am."

22 Let's continue.

23 Q. (By Ms. Smith) And the Plaintiff in this case, not  
24 some other Intellectual Ventures company, the Plaintiff in  
25 this case, they don't have a bunch of engineers developing

1 things, do they?

2 A. That is correct.

3 Q. And the Plaintiff -- excuse me, sir.

4 A. Excuse me. With respect to developing new inventions,  
5 that's correct. The engineers identify inventions.

6 Q. Now, the Plaintiff in this case doesn't sell  
7 telecommunications products, does it?

8 A. No. No, we do not.

9 Q. In fact, the Plaintiff in this case doesn't make any  
10 products, does it?

11 A. No, not -- not the specific Plaintiff in this case.

12 Q. And these engineers and these scientists that you talk  
13 about in the complaint against T-MO and Ericsson in this  
14 case, they're completely irrelevant to the facts in this  
15 case, aren't they?

16 A. They -- they are not involved with Malibu Networks.  
17 They are not involved with the patents in this case, that  
18 is correct.

19 Q. And the Plaintiff in this case, not these engineers and  
20 scientists, would stand to profit from the \$77 million,  
21 wouldn't it?

22 A. Yes, that is correct. More specifically -- excuse  
23 me -- the investors and the Plaintiff, but correct.

24 Q. All right, sir. You've heard of standing -- standard  
25 setting organizations, have you not?

1 A. Yes, ma'am, I have.

2 Q. For example, LTE is a technical standard?

3 A. Yes.

4 Q. And there's actually an organization that was dedicated  
5 to industry collaboration, if you will, in order to develop  
6 the technology that ultimately becomes part of the LTE  
7 standard?

8 A. Yes, ma'am, that's correct.

9 Q. And the Plaintiff didn't participate in the development  
10 of the LTE -- LTE standard, did it?

11 A. No, ma'am, we did not.

12 Q. Plaintiff didn't contribute any manpower to helping out  
13 with that standard?

14 A. No, ma'am, we did not.

15 Q. And the Plaintiff didn't contribute any of its  
16 expertise from any of its -- or IV, excuse me, IV didn't  
17 contribute to the standard, did it?

18 A. No, ma'am, we did not.

19 Q. All those engineers and scientists didn't contribute  
20 any expertise to the standard?

21 A. Not while at IV, no.

22 Q. Who's the largest contributor to the LTE standard?

23 A. It varies. There are certainly a number of significant  
24 contributors. To say the largest, don't know. It really  
25 kind of depends on how you quantify largest.

1 Q. Would it surprise you to learn that it's Ericsson?

2 A. No. Ericsson is certainly a great contributor to the  
3 LTE standards.

4 Q. When you say Ericsson is a great contributor to this  
5 standard, did you know that Ericsson's actually been  
6 awarded 400 U.S. patents that are actually standard  
7 essential?

8 A. I don't know the number.

9 MR. BLACK: Objection. May I approach?

10 THE COURT: Approach the bench.

11 (Bench conference.)

12 THE COURT: All right.

13 MR. BLACK: So --

14 THE COURT: Just a moment.

15 MR. BLACK: -- saying --

16 THE COURT: Just a moment. I'll tell you when.

17 All right. Go ahead.

18 MR. BLACK: So saying the patents are standard  
19 essential is a problem because she's just said they have  
20 400 patents that cover the LTE standard.

21 The only way to establish that would be to get  
22 somebody up and do an infringement analysis to say so. And  
23 that's unfair to us.

24 We've got to go through excruciating detail of  
25 infringement, and they want to argue that they have 400



1 standard essential patents, and that, therefore, our  
2 patents can't be worth very much.

3 But the reality is that many patents that people  
4 claim are standard essential are not essential. We all  
5 know that. So it is -- it's improper to suggest or state  
6 because they can't prove Ericsson actually has patents that  
7 are essential to the standard, and it's highly prejudicial  
8 to us.

9 THE COURT: What's your response, Ms. Smith?

10 MS. SMITH: I don't even understand the objection,  
11 Your Honor. The question is would it surprise you to know  
12 that Ericsson has 400 standard essential patents? They  
13 have all kinds patents in the telecom industry --

14 THE COURT: Let me check the record. Just a  
15 minute.

16 MS. SMITH: And, Your Honor, for what it's worth,  
17 that's my last question on this model on that point.

18 THE COURT: Well, I'm going to sustain the  
19 objection. I want you, Ms. Smith, to ask the same question  
20 again without preference to standards essential.

21 MS. SMITH: Okay.

22 THE COURT: I'm going to sustain the objection.

23 MS. SMITH: Understood, Your Honor.

24 THE COURT: Then we'll move on.

25 (Bench conference concluded.)

1 THE COURT: All right. I'm going to sustain that  
2 objection. The jury should disregard the last question and  
3 answer.

4 Ms. Smith, please restate that question.

5 MS. SMITH: Thank you, Your Honor.

6 Q. (By Ms. Smith) Sir, did you know that Ericsson has  
7 been awarded 400 U.S. patents?

8 A. I would assume they've been awarded a lot more than 400  
9 U.S. patents, quite honestly.

10 Q. Thank you, sir.

11 Sir, the Plaintiff is an entity that -- that holds  
12 patents that the Intellectual Ventures Management owns; is  
13 that correct?

14 A. Not technically. Intellectual Ventures Management  
15 is -- the overarching management company manages the  
16 different companies. The companies themselves own the  
17 patents. So Invention Investment Fund I technically is the  
18 entity that owns the patents. Intellectual Ventures  
19 Management provides management services.

20 MS. SMITH: May I see Defendants' Exhibit 558?  
21 I'm looking for the org chart, sir. 537, I apologize.

22 Q. (By Ms. Smith) All right. Sir, if you will -- I'll  
23 direct your attention to the bottom left-hand corner where  
24 it says Intellectual Ventures I LLC. You see that?

25 A. Yes, ma'am, I do.

1 Q. It's the Plaintiff in this case?

2 A. Yes, ma'am.

3 Q. Will you read what it says underneath that?

4 A. It says: Patent holding company.

5 Q. All right. So the Plaintiff is an entity that holds  
6 patents that IV owns, right?

7 A. Yes, ma'am.

8 Q. Thank you.

9 And when it comes time for IV to have to sue  
10 someone on a patent, the Plaintiff in this case is the  
11 entity that does the suing, right?

12 A. Yes, ma'am, that is correct.

13 Q. And you said earlier that IV has investors?

14 A. Yes.

15 Q. And that Plaintiff is one of the entities in which IV's  
16 investors invest?

17 A. Yes, through its -- through Investment Invention Fund  
18 I.

19 Q. And the goal here, the overall goal here is to buy low  
20 and sell high; is that correct?

21 A. Yes, ma'am, that's correct.

22 Q. Now, all of the patents that are owned by Plaintiff,  
23 they're purchased from other people or entities, correct?

24 A. Yes.

25 Q. And IV actually represents --

1 MS. SMITH: You can take that down, sir. Thank  
2 you.

3 Q. (By Ms. Smith) IV actually represents that -- and I  
4 believe this is a quote, I'll tell you, from your website.  
5 Are you familiar with your website, your IV website?

6 A. Generally, yes.

7 Q. All right. IV represents that its success in licensing  
8 comes from a commitment to only working with the best, the  
9 top -- top inventors from around the globe.

10 Does that ring a bell?

11 A. I haven't seen that particular quote, but that sounds  
12 consistent with what we like to do.

13 Q. But IV actually buys patents from auctions, doesn't it.

14 A. Absolutely.

15 Q. And IV buys patents from bankruptcies?

16 A. Yes, ma'am.

17 Q. That's one way to try to buy low and try to sell high,  
18 isn't it?

19 A. Yes. It's a source of patents.

20 Q. And we learned from Mr. Jorgensen yesterday that's  
21 exactly how IV came to buy the Malibu patents, isn't it?

22 A. Yes, ma'am, that's correct.

23 Q. And IV even buys patents on eBay, doesn't it?

24 A. We buy patents where -- if they're -- if we think  
25 they're good patents, wherever and however we can possibly

1 find them.

2 Q. And the purpose of those -- buying those patents is  
3 making a profit; is that correct?

4 A. Yes, ma'am, that's correct.

5 Q. Okay. Now, you told us earlier that IV has bought tens  
6 of thousands of patents.

7 A. Yes, ma'am, that's correct.

8 Q. And you understand that Ericsson has been awarded  
9 45,000 patents.

10 A. I don't know the exact number, but that number does not  
11 surprise me in the least.

12 Q. Does it surprise you that substantially all of those  
13 patents are what I would call homegrown?

14 Ericsson didn't buy them, but instead the folks at  
15 Ericsson were awarded those patents for their own  
16 inventions.

17 A. No, ma'am. I would expect that's where they came from.

18 Q. Now, when IV goes to license its patents, it does so  
19 for its entirely -- entire portfolio of patents held in one  
20 fund or another.

21 A. Sometimes. We are flexible, and we will license -- set  
22 the scope of the license to whatever the -- frankly, the  
23 request is of the company taking the license.

24 Q. Well, as an example, IV doesn't have any licenses to  
25 just the three patents in this case, does it?

1 A. Not to just the three patents in this case.

2 Q. And IV doesn't actually have any licenses to just the  
3 patents it bought from Malibu, does it?

4 A. No, ma'am.

5 Q. Prior to this case, IV -- IV has never even discussed  
6 the benefits of these patents in the case with any of its  
7 potential licensees or licensees.

8 A. That is correct.

9 MS. SMITH: Now, Your Honor, I believe I need to  
10 seal the courtroom at this time.

11 THE COURT: All right. Based on counsel's  
12 request, I'll order the courtroom sealed. Those present  
13 who are not subject to the protective order that's been  
14 entered in this case should excuse themselves until such  
15 time as the courtroom is unsealed and the public is invited  
16 to return.

17 MR. BLACK: Your Honor, may the IV folks who are  
18 here remain?

19 MS. SMITH: Yes. It's IV confidential information  
20 I'm about to discuss, Your Honor.

21 THE COURT: Then they'll be outside of this  
22 ruling.

23 MR. BLACK: Thank you.

24 (Courtroom sealed.)

25 (Sealed Portion No. 2 saved in separate sealed

1 transcript.)

2 (Courtroom unsealed.)

3 THE COURT: All right. Plaintiffs, call your next  
4 witness.

5 MS. HENRY: Your Honor, at this time, Plaintiff  
6 will read into the record certain stipulations and  
7 uncontested facts agreed to by the parties before we call  
8 our next deposition witness if that's acceptable.

9 THE COURT: That's agreeable to both sides?

10 MR. KUBEHL: Yes, Your Honor.

11 THE COURT: All right. Proceed, Ms. Henry.

12 MS. HENRY: Thank you, Your Honor.

13 The stipulations and uncontested facts of the  
14 parties are that IV filed its complaint against Defendants  
15 on August 9th, 2017.

16 The application leading to issuance of the '629  
17 patent was filed on July 9th, 1999.

18 The application leading to issuance of the '517  
19 patent was filed on August 10th, 2006.

20 For purposes of this case, the '629 patent is  
21 entitled to a priority date of July 9th, 1999.

22 For purposes of this case, the '517 patent is  
23 entitled to a priority date of July 9th, 1999.

24 The patents-in-suit expire on July 9th, 2019.

25 The named inventor of each of the patents-in-suit

1 is Jacob W. Jorgensen.

2 IV currently holds all rights, title, and interest  
3 to each of the patents-in-suit and has standing to bring  
4 this lawsuit.

5 IV possesses all rights of recovery under each of  
6 the patents-in-suit.

7 And the date of the hypothetical negotiation in  
8 this case is February 2013.

9 That concludes the stipulations, Your Honor.

10 I'm ready to call IV's next witness by deposition  
11 if that's acceptable.

12 THE COURT: Proceed to call your next witness by  
13 deposition.

14 MS. HENRY: Thank you. IV calls by deposition  
15 Mr. Ramesh Josyula. Included in this deposition excerpt,  
16 there's a reference to Josyula Deposition Exhibit No. 5.  
17 That's PTX-1087.

18 THE COURT: All right. Proceed with the witness  
19 by deposition.

20 MS. HENRY: Thank you, Your Honor.

21 (Videoclip played.)

22 QUESTION: Good morning.

23 ANSWER: Good morning.

24 QUESTION: Can you for the record please state  
25 your full name?



1           ANSWER:   Ramesh Josyula.

2           QUESTION:   And where do you currently work?

3           ANSWER:   I work at T-Mobile USA.

4           QUESTION:   And what is your position at T-Mobile?

5           ANSWER:   Senior manager system design  
6 architecture.

7           QUESTION:   Did shifting voice traffic from 3G to  
8 VoLTE enable T-Mobile to redeploy spectrum resources?

9           ANSWER:   Yes.   It's important, as you -- as you  
10 bring all the services to LTE, and also it's a long-term  
11 strategy is to refarm the spectrum that's available on UMTS  
12 as we get more free space to LTE and employed also for  
13 voice.

14          QUESTION:   Do you know what the document is?

15          ANSWER:   This is one of the appendices for part of  
16 the Ericsson RAN contract, I -- I think, so...

17          QUESTION:   Do you know what the purpose of this  
18 document is?

19          ANSWER:   My understanding of the purpose of the  
20 document is that when -- when T-Mobile and Ericsson in this  
21 case, I believe, right, so when they go through contract  
22 negotiations as a part of the high-level element there is  
23 going to be a bunch of FNBCs which we'll prepare.

24                 And I believe this is going to be -- this is one  
25 of the appendices related to the RAN features that Ericsson

1 is to be providing as a part of their roadmap.

2 QUESTION: Could you please turn to Page 4 of this  
3 document, Section 1.3?

4 ANSWER: Yes.

5 QUESTION: If you could take a moment and just  
6 read that section for me.

7 ANSWER: Yeah, I read Section 1.3.

8 QUESTION: Thank you. And is it your  
9 understanding that Ericsson committed to provide to  
10 T-Mobile base stations with software that complied with  
11 3GPP Release 9?

12 ANSWER: Yes. Ericsson -- Ericsson has an online  
13 portal, as well, which is called by their customer  
14 documentation portal.

15 The customer documentation portal also states what  
16 release at the high level complies to what 3GPP  
17 specifications.

18 So, for example, Release XYZ is compliant to 3GPP  
19 Release ABCD. It's -- it's at that high level we get an  
20 understanding of the Ericsson software release compliances  
21 to 3GPP.

22 QUESTION: So T-Mobile expects that whatever  
23 standard compliance is noted in the customer documentation  
24 is, in fact, what Ericsson is providing in their base  
25 stations?

1           ANSWER: That's correct.

2           QUESTION: So we discussed earlier this customer  
3 documentation portal; is that right?

4           ANSWER: That's correct.

5           QUESTION: Is that provided by Ericsson?

6           ANSWER: That's correct.

7           QUESTION: So Ericsson maintains the portal?

8           ANSWER: That's right. Ericsson maintains the  
9 portal, and the T-Mobile employees who need to have access  
10 to the documentation can go to the online portal and then  
11 get the related release information.

12          QUESTION: Does the portal have various different  
13 documents?

14          ANSWER: Yes. Portal has various different  
15 documents.

16          QUESTION: And, in general, what are the types of  
17 documents that you find in the portal?

18          ANSWER: You'll find the technical information  
19 about the products which we use in our network, and you  
20 find there's some operating documentation and some  
21 alarm-related information, performance -- performance  
22 counter-related information, and so on.

23          QUESTION: Does Ericsson provide a recommended  
24 value for every parameter?

25          ANSWER: Yes. That's my understanding, yes.

1 Ericsson does provide a recommended parameter value for  
2 every parameter.

3 QUESTION: And, generally speaking, how often does  
4 T-Mobile take Ericsson's recommendation for a parameter  
5 value?

6 ANSWER: If you see the recommended parameter set,  
7 it's hundreds and thousands of parameters which you can  
8 configure and tweak, so, right.

9 And there's a lot of parameters which we go with  
10 the default. There's very -- very few parameters which we  
11 are to change for obvious reasons. For example, cell ID.  
12 Cell ID is unique for each base station in the network, so  
13 we have to change it.

14 QUESTION: So the manager object model is  
15 maintained by Ericsson; is that right?

16 ANSWER: That's right.

17 QUESTION: Does T-Mobile make any modifications to  
18 the manager object model?

19 ANSWER: It's a part and parcel of the software.  
20 Since we do not modify software, we cannot change it.

21 QUESTION: Does T-Mobile work with its eNodeB  
22 vendors during the testing of the software?

23 ANSWER: It's a case-by-case basis, actually. In  
24 some cases, yes, T-Mobile do look into some of the testing  
25 aspects, actually, when we test in T-Mobile lab.

1 QUESTION: Does T-Mobile ever conduct testing on  
2 behalf of an eNodeB vendor at an eNodeB vendor's request,  
3 for example?

4 ANSWER: The majority of the cases -- in most of  
5 the cases in the T-Mobile lab, we do have the expert --  
6 experts from the vendor, okay?

7 So since the vendors have a better knowledge of  
8 how to operate the product, so we take vendor's help to  
9 validate the product in the lab.

10 QUESTION: Does T-Mobile test its eNodeB's  
11 compatibility with handsets that are connected to  
12 T-Mobile's network?

13 ANSWER: I'm not a -- like I said previously, I'm  
14 more expert on -- I manage -- I manage more on the radio  
15 access network, so...

16 QUESTION: Is it T-Mobile's expectation that  
17 handsets that communicate with T-Mobile's network are  
18 3GPP-compliant?

19 ANSWER: Yes. But, again -- yes.

20 QUESTION: Does T-Mobile's network deploy various  
21 QCI values?

22 ANSWER: Yes.

23 QUESTION: And those QCI values are associated  
24 with different types of services?

25 ANSWER: Yes. You can see -- you can see them in

1 the parameter dictionary, understanding like, there's a  
2 different type of service -- different types of QCI values  
3 mapped to different types of services.

4 (Videoclip ends.)

5 THE COURT: That completes this witness by  
6 deposition?

7 MS. HENRY: Yes, Your Honor. And I failed to  
8 mention earlier that Mr. Josyula is a principal engineer at  
9 T-Mobile USA, Inc.

10 THE COURT: Call your next witness.

11 MS. HENRY: Thank you, Your Honor. Plaintiff now  
12 calls by designation, Dr. -- Mr. Hussein Helmy who is also  
13 a principal engineer at T-Mobile USA, Inc.

14 The Helmy deposition Exhibit 11 is PTX-1376.  
15 Helmy Deposition 13, which is also referred to as  
16 Exhibit 12, is PTX-1377.

17 THE COURT: Proceed.

18 (Videoclip played.)

19 QUESTION: So to start off with, if we could get  
20 your full name for the record, if you don't mind.

21 ANSWER: Sure. My full name is Hussein Helmy.

22 QUESTION: And is that your current title,  
23 principal engineer?

24 ANSWER: Correct.

25 QUESTION: What division of T-Mobile do you work

1 in?

2 ANSWER: I work in the radio.

3 QUESTION: That's the name of the division is  
4 radio?

5 ANSWER: So it is the design department looking  
6 after radio.

7 QUESTION: Does T-Mobile use QCI-6 for T-Mobile  
8 user traffic and enterprise user traffic?

9 ANSWER: Yes, it does.

10 QUESTION: Does T-Mobile use QCI-7 for MetroPCS  
11 users and MVNO users?

12 ANSWER: Yes, it does.

13 QUESTION: Does T-Mobile use QCI-8 for inbound  
14 roamers?

15 ANSWER: No.

16 QUESTION: And what QCI value does T-Mobile use  
17 for inbound roamers?

18 ANSWER: QCI-7.

19 QUESTION: Does T-Mobile use QCI-9 for network  
20 extreme users?

21 ANSWER: Yes.

22 QUESTION: What does T-Mobile use QCI-8 for?

23 ANSWER: Nothing.

24 QUESTION: Are the network extreme users also  
25 known as, quote, heavy users?

1           ANSWER: Yes, that's another term you can refer to  
2 them as.

3           QUESTION: Would a heavy user be a user that  
4 exceeds their data plan limit?

5           ANSWER: That's one way of referring to them.

6           QUESTION: Would a heavy user be a user that  
7 exceeds 50 gigabytes of data in a given month?

8           ANSWER: Yes, but not exclusive to that.  
9 Depending on their plan.

10          QUESTION: Let's move on. Cell G2, Priority.  
11 Are you familiar with this parameter?

12          ANSWER: Yes.

13          QUESTION: What does it refer to?

14          ANSWER: Priority of the given application or  
15 service.

16          QUESTION: And what is your understanding of what  
17 priority is?

18          ANSWER: So the priority in surveying a specific  
19 application over the other.

20          QUESTION: And is this parameter currently  
21 implemented?

22          ANSWER: Yes.

23          QUESTION: And has it been implemented since the  
24 launch of LTE?

25          ANSWER: Yes.



1           QUESTION: And are the values as listed the  
2 current values?

3           ANSWER: Yes.

4           QUESTION: Exhibit 12, I believe -- and this was  
5 Bates No. TMO-CV577-00021082. And we were on Tab QOS. If  
6 you can go back there.

7           And the next cell that I'd like you to look at is  
8 Cell M2, Parameter Scheduling Algorithm.

9           ANSWER: Yes.

10          QUESTION: Are you familiar with this parameter?

11          ANSWER: Yes.

12          QUESTION: And what does it do?

13          ANSWER: We're specifying this column will be the  
14 scheduling algorithm that we would like to engage per QCI.

15          QUESTION: You're specifying the scheduling  
16 algorithm. Can you explain what that means by specifying  
17 scheduling algorithm?

18          ANSWER: As we went over yesterday, Ericsson  
19 offers in their portfolio of products a number of  
20 scheduling algorithms, and we choose which scheduling  
21 algorithm to engage per QCI.

22          QUESTION: And is this parameter currently  
23 implemented on T-Mobile's Ericsson LTE eNodeBs?

24          ANSWER: Yes, it is.

25          QUESTION: And do you know when it was first

1 implemented?

2 ANSWER: It was first implemented since the  
3 inception of LTE and T-Mobile.

4 QUESTION: And is it currently implemented on all  
5 of T-Mobile's Ericsson LTE eNodeBs?

6 ANSWER: Yes, it is.

7 QUESTION: And has it been implemented on all of  
8 T-Mobile's Ericsson L -- LTE eNodeBs since it was first  
9 implemented?

10 ANSWER: Yes.

11 QUESTION: And are the values as listed the  
12 current values of this parameter?

13 ANSWER: Yes, they are.

14 (Videoclip ends.)

15 THE COURT: Does that complete -- complete this  
16 witness by deposition?

17 MS. HENRY: Yes, Your Honor.

18 THE COURT: Call your next witness.

19 MS. HENRY: Plaintiff calls by deposition  
20 Mr. Saad Naveed Ahmed. Mr. Ahmed is a system engineer at  
21 Ericsson. Ahmed Deposition Exhibit No. 1 is PTX-1132.

22 THE COURT: Proceed.

23 (Videoclip played.)

24 QUESTION: Good morning, Mr. Ahmed.

25 ANSWER: Good morning.

1 QUESTION: When did you start working at Ericsson?

2 ANSWER: I started in November 2011.

3 QUESTION: And what is your current job title?

4 ANSWER: I'm a systems engineer, 4G and 5G.

5 QUESTION: And the current TTI is the next one  
6 that is being scheduled?

7 ANSWER: The current TTI is the TTI that is being  
8 scheduled.

9 QUESTION: Being scheduled. TTIs before that,  
10 then you consider as past TTIs?

11 ANSWER: I would say so.

12 QUESTION: Anything following that current TTI,  
13 you would then consider a future TTI?

14 ANSWER: Yeah.

15 QUESTION: Going back to Exhibit 1, let's just  
16 look at that document again. So for these, the results in  
17 Exhibit 1, those are run on an actual eNodeB; is that  
18 correct?

19 ANSWER: That is correct.

20 QUESTION: And what software release were these --  
21 did that -- those eNodeB use?

22 ANSWER: They were run on 18Q4 software.

23 QUESTION: And that's the latest release?

24 ANSWER: That is the latest.

25 QUESTION: And between 18Q4, going all the way

1 back to, let's say, 13 -- Release 13A -- let me start over.

2 Between 18Q4 and Release -- let's say --

3 ANSWER: 14A.

4 QUESTION: -- 14A, were there any significant  
5 differences in the functionality for SABE or DBS?

6 ANSWER: Not any changes of fundamental nature  
7 that change how the delays are calculated or the buffers  
8 are estimated.

9 QUESTION: So you would expect that if you use  
10 Release 14A instead of Release 18Q4, you would get very  
11 similar results?

12 ANSWER: Yeah.

13 QUESTION: So with respect to the uplink  
14 scheduler, does the Ericsson uplink scheduler allocate  
15 resources in any future TTIs?

16 ANSWER: No.

17 QUESTION: Does it allocate resources in any  
18 future frames?

19 ANSWER: No.

20 QUESTION: What TTI does it allocate for?

21 ANSWER: It allocates only for the current TTI.

22 (Videoclip ends.)

23 THE COURT: That complete this is witness by  
24 deposition?

25 MS. HENRY: Yes, Your Honor.

1 THE COURT: Call your next witness.

2 MS. HENRY: And, finally, Your Honor, Plaintiff  
3 calls by deposition Mr. Alexander Langereis. Mr. Langereis  
4 is a system engineer at Ericsson. Langereis Deposition  
5 Exhibit No. 7 is PTX-338.

6 THE COURT: And this is your last witness by  
7 deposition?

8 MS. HENRY: At this time, Your Honor.

9 THE COURT: All right. Let's proceed.

10 (Videoclip played.)

11 QUESTION: Good morning, Mr. Langereis.

12 ANSWER: Good morning.

13 QUESTION: Could you please state your full name  
14 for the record?

15 ANSWER: My full name is Alexander Langereis.

16 QUESTION: How long have you been at Ericsson?

17 ANSWER: A little bit more than 18 years.

18 QUESTION: And what time did you start in LTE?

19 ANSWER: Approximately 2 -- 2006.

20 QUESTION: And what kind of work have you done on  
21 LTE?

22 ANSWER: I have been working as a system engineer  
23 during all that time until two years ago.

24 I started off developing features. Usually, I've  
25 been working as a team leader for and a feature responsible

1 for developing new features.

2 QUESTION: If you could turn to Exhibit 7,  
3 Page 4770.

4 Given your last response, does the -- do the  
5 grants shown in this picture represent what would happen in  
6 practice?

7 ANSWER: No.

8 QUESTION: What would be different?

9 ANSWER: In reality, it would not be approximately  
10 40 milliseconds in between. Assuming a normal situations  
11 where UE is not alone in a cell and is not experiencing  
12 perfect radio conditions, this U -- this data of this UE  
13 would need to compete with other data and other users.

14 We can in no way guarantee that the -- that the  
15 data, which is connected to VoIP, is scheduled every 40  
16 milliseconds.

17 QUESTION: Well, then do you -- are -- now sitting  
18 now here, do you -- are -- does the uplink scheduler  
19 schedule RL -- RLC SDU's?

20 ANSWER: Yes, it does.

21 QUESTION: And are -- are VoIP packets a type of  
22 IP packet?

23 ANSWER: Yes.

24 QUESTION: And is there a one-to-one  
25 correspondence between VoIP packets and RLC SDU's?

1 ANSWER: Yes.

2 QUESTION: Do you know the details of how data  
3 gets packed into an RLC SDU?

4 ANSWER: No.

5 QUESTION: Do you know whether partial packets may  
6 be packed into an RLC SDU?

7 ANSWER: No.

8 QUESTION: Do you know whether more than one IP  
9 packet could be included in an RLC SDU?

10 ANSWER: No.

11 QUESTION: If you wanted to know those answers,  
12 who would you ask?

13 ANSWER: I would ask Christien Skarby.

14 (Videoclip ends.)

15 THE COURT: That completes this witness by  
16 deposition?

17 MS. HENRY: Yes, Your Honor.

18 THE COURT: Counsel, approach the bench, please.

19 (Bench conference.)

20 THE COURT: Who do you have next, Mr. Black?

21 MR. BLACK: We have Dr. Williams, our infringement  
22 expert.

23 THE COURT: I assume he's going to take some time?

24 MR. BLACK: Yes.

25 THE COURT: All right. Then we'll use this

1     juncture for a recess.

2             (Bench conference concluded.)

3             THE COURT: Ladies and gentlemen of the jury, this  
4     looks like an appropriate time to take a morning recess.

5             I'm going to ask you simply to close and leave  
6     your juror notebooks in your chairs.

7             I'll remind you to follow all my instructions,  
8     including, of course, not to discuss the case among  
9     yourselves. Take a few minutes, stretch your legs, get a  
10    drink of water, and we'll be back in here shortly to  
11    continue with the next Plaintiff's witness.

12            The jury is excused for recess.

13            COURT SECURITY OFFICER: All rise.

14            (Jury out.)

15            THE COURT: The Court stands in recess.

16            (Recess.)

17            COURT SECURITY OFFICER: All rise.

18            THE COURT: Be seated, please.

19            Plaintiffs, are you prepared to call your next  
20    witness?

21            MR. BLACK: Yes, Your Honor. Dr. Tim Williams.

22            THE COURT: All right. You may go to the podium,  
23    Mr. Black, assuming you're going to do the direct.

24            And I'll direct the Court Security Officer to  
25    bring in the jury, please.



1 MR. BLACK: Your Honor, I've arranged the first 30  
2 slides or so as non-confidential --

3 THE COURT: Let me know.

4 COURT SECURITY OFFICER: All rise.

5 (Jury in.)

6 THE COURT: Be seated, please.

7 Plaintiffs, call your next witness.

8 MR. BLACK: Plaintiff calls Dr. Tim Williams.

9 THE COURT: If you'll come forward, Dr. Williams,  
10 and be sworn.

11 (Witness sworn.)

12 THE COURT: Please come around, have a seat on the  
13 witness stand.

14 All right. Mr. Black, you may proceed.

15 MR. BLACK: Thank you, Your Honor.

16 TIM WILLIAMS, PH.D., PLAINTIFFS' WITNESS, SWORN

17 DIRECT EXAMINATION

18 BY MR. BLACK:

19 Q. Good morning, Dr. Williams.

20 A. Good morning.

21 Q. Would you tell the jury what you are here to testify  
22 about today?

23 A. My name is Tim Williams. I'm here to provide an expert  
24 opinion regarding the infringement of the patents-in-suit  
25 by the asserted -- for the asserted patents-in-suit against

1 the -- the services and technology of Ericsson and  
2 T-Mobile.

3 Q. Could you give us a little background about your  
4 education and experience?

5 A. I grew up in a small town in Michigan and went to  
6 undergraduate school for electrical engineering in  
7 Houghton, Michigan, which is six hours north of Green Bay,  
8 Wisconsin. Came down after that to Chicago to work for  
9 Motorola, building wireless systems, wireless digital data  
10 systems. And then in 1979, I moved to Austin with  
11 Motorola, still designing communication systems. And while  
12 in Austin, I did my Master's and Ph.D. in electrical  
13 engineering.

14 Q. And where did you get your Ph.D. in electrical  
15 engineering?

16 A. At UT Austin.

17 Q. Do you hold any patents?

18 A. Yes, I have 26 issued U.S. patents, all in the field of  
19 communications.

20 Q. And you mentioned Motorola. Could you give us a little  
21 more detail about your experience in the industry?

22 A. Yes. I started working at Motorola building two-way  
23 radios -- encrypted two-way radios for police and fire  
24 departments and military. And then moved to Austin and  
25 started designing chipsets for cellular communications.

1           So I believe you've seen first generation, second  
2 generation, third generation chart before in this trial.  
3 I built the chipsets for first and second generation  
4 cellular systems while at Motorola.

5 Q. Let's talk about the basics of telecommunications  
6 networks.

7           All right. What do we see on Slide 5?

8 A. On this slide, you see how a cellular network works.  
9 So a cellular network divides a geographical area up into  
10 cells.

11           So a city the size of Marshall might have 10  
12 cells. And those cells each have an antenna, and they have  
13 a base station that services that antenna. And that base  
14 station provides a transmitter and receiver for the  
15 transmitter and receiver for the cell phone that you carry  
16 around in your pocket.

17 Q. Is there a convention in the industry with respect to  
18 what folks call the direction of traffic?

19 A. Yes. Information that's flowing from the network to  
20 the cell phone is called the downlink direction.

21           Information that's flowing from the cell phone  
22 into the network is called the uplink direction.

23 Q. As -- as you've mentioned, we've heard discussion about  
24 2G, 3G, 4G. Could you give us some background on the  
25 evolution of cellular communications?

1 A. So on the first generation, this was an analog system.  
2 So the -- it only carried voice, and the voice was carried  
3 as an analog signal. And the first generation systems had  
4 very low user density. So a carrier can only get a certain  
5 number of people in a geographic area on the network.

6 And then in the late '80s and early '90s, the  
7 desire for the carriers was to increase the number of users  
8 in the network. And in order to do that, we converted the  
9 voice to a digital voice and increased the density of the  
10 users on the network.

11 And as the '90s progressed, digital data became  
12 more and more important. And the Internet started to  
13 explode. So people wanted their Internet information on  
14 their cell phones.

15 So as the second generation went along, there was  
16 more and more demand for data services on the second  
17 generation cell phones.

18 And the service providers provided that by adding  
19 on systems to second generation cell phones to service that  
20 data need.

21 And, finally, in 2000s and third generation, those  
22 two, the voice and data aspects came together in a single  
23 system which served us throughout the 2000s.

24 And then in 2010s, the fourth generation or what  
25 is called LTE came along, and that provided even faster

1 data, even more efficient data.

2 And following that was a service called VoLTE,  
3 which actually put the voice on the same data traffic as  
4 the Internet data.

5 Q. And when did Dr. Jorgensen do the work that led to his  
6 patented ideas?

7 A. Dr. Jorgensen's work was done at the very end of the  
8 second generation, so before the voice and data paths came  
9 together, and the high speed data was serviced.

10 So the multiple types of service aspects that a --  
11 a carrier would like to provide were just starting to form  
12 when Dr. Jorgensen did his work.

13 Q. And just so we can orient the jury, when did the iPhone  
14 come into -- come on to the market?

15 A. 2008.

16 Q. Okay. Did 2G phones have the ability to receive voice  
17 and data?

18 A. Yes, but on separate -- separate pipes or separate  
19 services.

20 So as I mentioned initially, 2G was all about the  
21 voice, and then as -- as the Internet became more and more  
22 popular, the service providers added data on to 2G. So you  
23 could either have a voice call or a data call with a 2G  
24 system.

25 Q. And what are these little rectangles and squares we see

1 here?

2 A. So that's a representation of a packet, and the packet  
3 is being communicated between the base station and your  
4 cell phone.

5 Q. And how did that work in 3G?

6 A. In 3G, we could have both voice and data  
7 simultaneously, but they still resided on different  
8 circuits or different paths.

9 And then in 4G, eventually -- especially with  
10 VoLTE, they came together into a single path.

11 Q. Going back to the 2G time frame when Dr. Jorgensen  
12 was -- was doing his work, what problems did carriers have  
13 in providing service to their customers?

14 A. The problem has been constant since the beginning of  
15 the industry, to increase user density. So because the  
16 equipment and the spectrum was very expensive, the more  
17 users a service provider can put on to the network, the  
18 better their economics work.

19 So it's a constant demand to put more and more  
20 people on the network.

21 Q. You mentioned voice Internet traffic. Were there  
22 any issues in these networks in providing multiple  
23 types of services to the same phone?

24 A. The need to provide voice, web browsing, video  
25 streaming, watching YouTube, for example, all those

1 services have different types of demands on them in terms  
2 of their quality of service, their -- their characteristics  
3 of that type of service.

4 And so in order to provide for those types of  
5 services, you have to take into account what the needs of  
6 each of those services are.

7 Q. You mentioned spectrum a moment ago. Could you explain  
8 that?

9 A. So the way we carry information from the transmitter to  
10 the receiver is on a -- on a radio frequency wave. So we  
11 actually modulate the wave, we change the characteristics  
12 of the wave, and that wave propagates from the transmitter  
13 to the receiver.

14 And the federal government controls all the radio  
15 spectrum in the United States, and there's an organization  
16 called the Federal Communications Commission that controls  
17 access to those radio waves.

18 And the U.S. Government auctions off or sells off  
19 pieces of the radio spectrum, and -- from the -- and  
20 receives payments from the carriers for their right to use  
21 those pieces of the spectrum.

22 So these cost the carriers hundreds of millions to  
23 billions of dollars in order to -- just to gain the access  
24 to -- just to gain the right to access that spectrum.

25 And then on top of that, the carrier has to build

1 out a network, add equipment, service it, sell -- sell  
2 subscriber devices, things like that.

3 Q. With respect to the equipment that is in a standard  
4 telecommunications network, I'd like to run through with  
5 you the different components that the jury is going to hear  
6 about during your testimony.

7 So starting on the left with the phone, what's the  
8 first piece of equipment?

9 A. So if we're going to place a phone call, if you're --  
10 if you're going to call your mother, for example, you're  
11 going to have your cell phone, and you're going to dial the  
12 telephone number for your number, that communication is  
13 going to go between your cell phone and the cell tower.

14 And the cell tower is on the earth. It's part of  
15 the cell. It's connected to a base station, and that base  
16 station is going to interpret your radio waves and derive  
17 your voice from that radio wave and enter your voice into  
18 the core network, into the switching network of the  
19 communications provider.

20 Now, that switching network is going to direct  
21 your call to Poughkeepsie, for example.

22 And in Poughkeepsie, it's going to drop your call  
23 into the public telephone network, and it's going to cause  
24 the public telephone network to ring your mother's phone.  
25 And that's how a telephone call is placed.



1 Q. Did there come a time when carriers decided they would  
2 like to send Internet traffic to phones?

3 A. Yes. As I mentioned, as the Internet grew up and --  
4 and became more important, there was more and more demand  
5 by users to be able to access web pages and YouTube, things  
6 like that.

7 Q. And what -- what was the general architecture that  
8 carriers used to provide that new service?

9 A. Carriers added a parallel core network that carried the  
10 data traffic all the way down to the base station, and --  
11 and this dealt with Internet Protocol packets or IP  
12 packets.

13 And so you could either be on the IP network, or  
14 you could be on the voice network in second generation.  
15 And you could -- it was either/or.

16 Q. All right. Let's take a deeper dive.

17 Could you tell us what a virtual circuit is.

18 A. A virtual circuit is a dedicated circuit from the  
19 source to the destination.

20 So in my example, there would be a dedicated  
21 circuit from Marshall to Poughkeepsie to carry your voice  
22 over to the telephone network in Poughkeepsie.

23 And in this example, if there -- if the network  
24 has a capability of a hundred simultaneous phone calls, if  
25 there's a hundred and first phone call that's entered into

1 the network that's offered, that hundred and first phone  
2 call will get rejected, and you'll get a busy signal.

3 Q. Is there any difficulty in using virtual circuits with  
4 speech?

5 A. When a virtual circuit is established, it guarantees a  
6 chat for the voice. It guarantees a bit rate or a  
7 bandwidth for that voice.

8 And what we found out through research over the  
9 years is that speech is about 50 percent silence. So when  
10 you and I are talking, about half of what we're talking  
11 about is silence.

12 And so because I'm not -- because there's silence,  
13 I'm not actually sending any information across this --  
14 this virtual circuit. So you would think that you could be  
15 able to reuse that capacity. But with a virtual circuit,  
16 it's dedicated that capacity to a single phone call.

17 So even, though, only half of speech is -- is  
18 actual active talking, that hundred and first circuit would  
19 still be dropped in a virtual circuit because of the  
20 guaranteed bandwidth.

21 Q. And is use of bandwidth important to telecommunications  
22 carriers like T-Mobile?

23 A. Yes. For example, in this case, if you didn't have a  
24 virtual circuit, you could get twice as many people talking  
25 on that same hundred-circuit-capacity equipment.

1 Q. Now, inside the network, the -- let's talk about the  
2 core network. How does traffic move around within that  
3 network?

4 A. So inside the core network, there was a technology  
5 called ATM. You've heard some of that yesterday and today.

6 And ATM used virtual circuits to carry voice  
7 packets and to -- to carry data packets throughout the  
8 network, and it dedicated bandwidth just like we saw in the  
9 last slide.

10 Q. Okay. Dr. Jorgensen mentioned the ATM systems that he  
11 had rejected. Could you just generally give us an overview  
12 of his solution to the problems of the time, and then we'll  
13 go deeper into the technology.

14 A. So at the time, the carriers had invested a lot of  
15 money in ATM capabilities, and so their natural inclination  
16 was -- when it came to communicating over a wireless  
17 circuit, was to just bring ATM out all the way to the cell  
18 phone to be able to use ATM over the wireless network.

19 However, Dr. Jorgensen, we heard yesterday that he  
20 tried that and it didn't work and he moved to IP packets.

21 He used -- he moved to the technology used in the  
22 Internet in order to facilitate that communication.

23 So if we look at Dr. Jorgensen's invention, he  
24 uses IP, and he invented -- he uses two technologies, a  
25 classification technology that he talked about yesterday

1 and a scheduling technology that he talked about yesterday  
2 in order to be able to provide multiple types of services,  
3 voice, video, Internet browsing, over to the cell phone.

4 Q. And just so we can try to show the jury what's going on  
5 here, can you circle the IP packets? We'll try out the  
6 technology here and see if it works.

7 A. So IP is used here in this interface, and IP packets  
8 are broadcast to the cell phone, and the two technologies  
9 that Dr. Jorgensen used to provide this service for  
10 multiple types of service offerings were classification and  
11 scheduling.

12 Q. Okay. All right. Did he obtain three patents on those  
13 inventions?

14 A. Three patents were issued, yes.

15 Q. And what were the numbers of those patents?

16 A. The '629 patent, the '206 patent, and the '517 patent.

17 MR. BLACK: And if we could call up the '629  
18 patent, PTX-1, and just show the jury what the face of the  
19 patent looks like.

20 Q. (By Mr. Black) They have it in the jury book, but why  
21 don't we explain a little about what information appears on  
22 the face of a patent.

23 A. So U.S. patents have a particular structure that makes  
24 them easy to read. You see the patent number up here, and  
25 you see the date that the U.S. Patent Office issued the

1 patent here. You see the name of the inventor here. You  
2 see the assignee, which was Malibu Networks at the time,  
3 here. You see the date that the patent was filed, July  
4 9th, 1999, which happens to be my birthday. You see an  
5 abstract that describes the -- in general, what the patent  
6 is about.

7 MR. BLACK: And then let's go to the -- let's go  
8 to the next page.

9 Q. (By Mr. Black) You see some of the figures. Just give  
10 the jury a sense of what they look like and what their  
11 function is.

12 MR. BLACK: Actually, I'll tell you what. We're  
13 on Page 1. Let's just blow up the figure at the bottom  
14 there.

15 Q. (By Mr. Black) Now, do patents come along with  
16 diagrams to assist the reader?

17 A. Typically, they -- there's a diagram that shows what  
18 the patent is discussing.

19 Q. And what follows the figures -- the diagrams in a  
20 patent, typically?

21 A. The written description.

22 Q. And what does that consist of?

23 A. That -- that talks about the background of the  
24 invention. It sets up the problem that's going to be  
25 solved by the invention, and then describes the -- the

1 details of the invention to one of ordinary skill in the  
2 art so that the goal is that anybody who understands the  
3 technology should be able to read this and actually  
4 implement the invention.

5 MR. BLACK: And if we could go to the end of the  
6 patent and look at the claims.

7 Q. (By Mr. Black) And what do we see here?

8 A. Here you see a statement that says what is claimed is,  
9 and then a single sentence that describes the boundaries of  
10 the invention that the inventor created.

11 It describes essentially the -- the metes and  
12 bounds of the invention. It describes the -- the border of  
13 the invention that that inventor created.

14 Q. And are inventions typically comprised of some things  
15 that were in the prior art, as they say, and some things  
16 that are new?

17 A. Well, everyone stands on the shoulders of the people  
18 who came before them. So the invention was determined  
19 by -- before it's issued, was determined by the U.S. Patent  
20 Office to be new and novel.

21 MR. BLACK: Let's go to Slide 18.

22 Q. (By Mr. Black) Okay. We're going to hear some  
23 building block terms during the course of the rest of your  
24 testimony.

25 Let's start with the concept of a packet.

1 A. So a packet in general has two pieces, a header and a  
2 payload. And a simple analogy is if we're going to send a  
3 toy through UPS, we're going to take that toy -- that's the  
4 payload. We're going to take that toy and put in a box --  
5 in a UPS box, and we're going to use the UPS label as the  
6 header which describes where that toy is from and where  
7 it's going to and the priority of the -- of the box.

8 And so we pack that -- we pack the toy in the box,  
9 we put the label top of the box, and then we place that box  
10 into a packet stream with other packets, and it gets routed  
11 to the appropriate destination, just like a FedEx box. So  
12 it's a simple analogy -- a packet as a FedEx box.

13 Q. We've just got to run through that again. Our graphics  
14 people are real proud of this.

15 Okay. Is there a -- a name for the -- the thing  
16 in which the packets are traveling that engineers sometimes  
17 use to describe this?

18 A. Some people call it a pipe.

19 Q. All right. Let's talk about voice packets and the  
20 voice pipe. Tell us about the characteristics of voice  
21 packets.

22 A. So voice, if you want it to sound proper and not have a  
23 bunch of effects and drop-outs and things like that, the  
24 voice -- once you digitize it, the voice needs to arrive at  
25 the other end -- communicate from the transmitter to the

1 receiver on time. It needs to get there on time.

2 And so the primary need is for the -- the voice to  
3 arrive on time. So delay is unacceptable. Some tolerance  
4 to errors are okay because your ear doesn't hear every  
5 single thing.

6 And then jitter -- too much jitter is  
7 unacceptable, so it will sound like bird calls in the  
8 background if it's too jittery.

9 So these are the characteristics of a voice-type  
10 service that we have to accommodate in any design for a  
11 communication system.

12 Q. And do data packets differ in any way for voice  
13 packets?

14 A. Data packets are quite different.

15 For example, if we're going to call up a web page  
16 for the Dallas Morning News, the packets must all receive  
17 -- every packet must be received, but not necessarily in  
18 order. It doesn't really matter if they come out of order.  
19 Delay is more acceptable for data packets. There's no  
20 tolerance for error.

21 If you have a picture, for example, that you want  
22 to see and it gets errors in it, you're not going to be  
23 able to see the whole picture.

24 And jitter is more acceptable. So different  
25 characteristics for different types of service.



1 Q. And could you just go over again why it is that the  
2 Dallas News site here has X'd out pictures?

3 A. Because the communication path had errors in it, so  
4 there was no -- so the complete information did not arrive  
5 at the receiver.

6 Q. And is that the sort of thing people would see when  
7 they're sitting in front of their computer waiting for the  
8 Internet to load and it just doesn't happen or you just get  
9 the text but not the picture?

10 A. Unfortunately, yes.

11 Q. Okay. All right. Now, if you're trying to build a  
12 system with all these different types of information in  
13 them with different characteristics and requirements that  
14 you describe, what kinds of problems do you run into?

15 A. Well, as I mentioned, if we're going to service in this  
16 communication system voice, Internet, and video-type  
17 services, they all have different types of demands on the  
18 service.

19 So as we just looked at, voice has some tolerance  
20 to air but has an important tolerance to delay.

21 So there's different characteristics for each type  
22 of service that you can see here. And so we have to take  
23 that into account when we design the system.

24 And the shorthand version of that is -- we call it  
25 quality of service or QoS.

1 Q. Could you describe Dr. Jorgensen's invention at a high  
2 level?

3 A. So what -- what did Dr. Jorgensen do? He -- he came up  
4 with a system that actually used IP packets and classified  
5 those packets initially.

6 So as they were coming into the base station, he  
7 would look at the packet, and say, oh, this is a voice  
8 packet, we're going to put it over here. And, oh, this is  
9 an Internet web browsing packet, we're going to put it over  
10 here. And this is a video packet, we're going to stick  
11 that over there.

12 So this classifier just sorts through the incoming  
13 data quickly and places the data into queues or into bins,  
14 and these bins are all a common type of traffic.

15 Q. Let's walk through step-by-step how this works.

16 A. And -- yes, go ahead.

17 Q. So what do we see here?

18 A. So here we see the core network, which we looked at  
19 before, and it's going to be sending the base station  
20 different -- packets of different type. And the classifier  
21 is going to look at these packets and sort them out into  
22 different bins or different queues.

23 And so you see all the voice packets go into one  
24 queue, all the Internet packets go into another queue, and  
25 the video go into another queue.

1 Q. And then the -- just go back.

2 A. So once you get these queues --

3 Q. All right. So that was the classification process, and  
4 then the next one on the right is the scheduler.

5 A. So the scheduler here is going to look at these bins or  
6 look at these queues and figure out, well, I've got so much  
7 of -- of voice traffic, I've got so much of data traffic,  
8 I'm going to schedule that to -- to be transported in this  
9 order.

10 So it -- it creates a schedule for when those  
11 packets are going to -- going to go over the air to the  
12 receiver. And that's in the resource grid here.

13 And you'll see -- in this animation, you'll see  
14 the incoming -- different types of services come in and be  
15 placed into the resource grid for communication over to the  
16 individual cell phones.

17 Q. Now, just so we understand where we are here, where is  
18 the scheduler?

19 A. So the scheduler is in the base station. You can see  
20 that here.

21 Q. And we've got a little out of scale because that tower  
22 is maybe a hundred feet high or it could be at the top of a  
23 building or something; is that right?

24 A. Yes.

25 Q. And the base station is a small -- relatively small

1 piece of equipment compared to the tower; is that right?

2 A. We saw some of the pieces yesterday.

3 Q. Okay. So the schedule's in the base station.

4 Now, you -- we have the resource grid. Where is  
5 the resource grid?

6 A. The resource grid is the -- the capability in the air  
7 to -- to communicate that information. So it's just like  
8 a -- you can think of it as a FedEx truck. You know, which  
9 FedEx truck is this package going to go on? Is it going to  
10 go to Houston? Is it going to go to Poughkeepsie? Is it  
11 going to go to Dallas?

12 Q. All right. That resource grid is filled up, and then  
13 what happens from there?

14 A. So once the resource grid is determined by the  
15 scheduler, then the radio network broadcasts that  
16 information over the air. And each of the individual cell  
17 phones picks up the appropriate piece of information, and  
18 you get to watch your YouTube video.

19 Q. What are the blocks in the resource grid, and why  
20 are they colored differently?

21 A. So they're colored differently because they're  
22 different types of services, and these blocks -- we have  
23 two types of resources in communications. We have time,  
24 and we have frequency.

25 And so we can use time and frequency to our

1 advantage to put multiple types of pieces of information  
2 together in order to communicate those over the air,  
3 ultimately to get more people on the network.

4 Q. And what are the red, the green, and the blue box?

5 A. Voice, Internet traffic, and video service.

6 Q. Is the traffic in this example in separate -- in a  
7 consolidated pipe?

8 A. Yes. So it's all in one set of transmissions.

9 Q. Could you tell us what a control channel is?

10 A. So a control channel is not user data; it's data that's  
11 used to control the network. So it makes sure that both  
12 ends -- both the transmitter and the receiver understand  
13 their state, understand what -- what they're about to  
14 receive, understand the commands that are coming to -- to  
15 the mobile phone as to what it needs to do. So the control  
16 channel is -- is the organizer; it's the controller.

17 Q. Are there benefits to combining all this data in one  
18 pipe?

19 A. Yes. The '206 patent gives the user QoS aware  
20 scheduling, gives the user intelligence in the base station  
21 and phone control.

22 The '517 gives the user allocation of bandwidth  
23 based on QoS classifications.

24 And the '629 gives the user isochronous placement  
25 of data.

1 Q. And we're going to go over those in more detail, but at  
2 this point, at a high level, what are the real-world  
3 benefits to a carrier like T-Mobile for using these  
4 inventions?

5 A. So someone who uses the inventions of these patents  
6 derives the benefits of more subscribers; they can offer  
7 more services, voice, video, and data, for example; they  
8 can lower their operating costs; they can reduce the number  
9 of dropped telephone calls; they can provide faster data to  
10 their users; and they can provide improved voice quality.

11 Q. We've heard a lot about VoLTE, Voice over LTE, during  
12 the trial. What are the benefits and importance of these  
13 patents to VoLTE?

14 A. So as I've described, when we move from second  
15 generation to third generation to fourth generation, we've  
16 consolidated the voice and the data channels onto one pipe  
17 or one transport mechanism, and VoLTE allows voice and data  
18 on the same channel and allows for savings in spectrum,  
19 which, as we've looked at, are very expensive. And, of  
20 course, the need for the carrier to increase the number of  
21 people they can serve with a given amount of spectrum is  
22 ever present.

23 And also the '629 provides a better quality of  
24 voice for the user.

25 MR. BLACK: At this time, Your Honor, we are at

1 the point where I have confidential information, and we  
2 need to seal the courtroom from here on.

3 THE COURT: All right. Based on counsel's  
4 request, I'll order the courtroom sealed at this time.  
5 Those present, not subject to the protective order that's  
6 been imposed in this case should exclude themselves and  
7 remain outside the courtroom until it's reopened and  
8 unsealed.

9 MR. KUBEHL: Your Honor, may the Ericsson  
10 personnel stay since he's going to be talking about their  
11 information?

12 THE COURT: Any objection, Mr. Black?

13 MR. BLACK: I don't have an objection. There's  
14 T-Mobile confidential information in here that came  
15 directly from their files. So as long as T-Mobile and  
16 Ericsson are joined at the hip on this, that's fine.

17 MR. KUBEHL: That's fine, Your Honor.

18 THE COURT: All right. Then we'll proceed on that  
19 basis.

20 (Courtroom sealed.)

21 (Sealed Portion No. 3 saved in separate sealed  
22 transcript.)

23 (Courtroom unsealed.)

24 THE COURT: And, ladies and gentlemen, we'll use  
25 this opportunity to break for lunch. We'll return after

1 lunch and begin with the Defendants' cross-examination of  
2 Dr. Williams.

3 I'm going to ask you to take your notebooks with  
4 you. I'm told by the clerk that your lunch is waiting for  
5 you in the jury room.

6 Follow all the instructions I've given you,  
7 including, of course, not to discuss case among yourselves.

8 It is 10 minutes until 12:00 by my clock. We'll  
9 try to reconvene about 12:35. That should be about 45  
10 minutes from now.

11 All right. With those instructions, the jury is  
12 excused for lunch.

13 COURT SECURITY OFFICER: All rise.

14 (Jury out.)

15 THE COURT: The Court stands in recess for lunch.

16 (Recess.)  
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CERTIFICATION

I HEREBY CERTIFY that the foregoing is a true and correct transcript from the stenographic notes of the proceedings in the above-entitled matter to the best of my ability.

/S/ Shelly Holmes  
SHELLY HOLMES, CSR, TCRR  
OFFICIAL REPORTER  
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Expiration Date: 12/31/20

2/5/19  
Date